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(54) Title: MASCARA COMPOSITIONS HAVING IMPROVED WEAR AND BEAUTY BENEFITS (57) Abstract The present invention relates to emulsion mascara compositions comprising inorganic colloidal materials incorporated in the emulsion's internal phase. In doing so, the composition exhibits good film strength while avoiding undesired rheology modification of the composition. These compositions also exhibit very good resistance to smudging, smearing and flaking once the composition has been applied to the eyelashes.		

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MASCARA COMPOSITIONS HAVING IMPROVED WEAR AND BEAUTY BENEFITS

TECHNICAL FIELD

The present invention relates to emulsion mascara compositions comprising inorganic colloidal materials incorporated into the emulsion's internal phase. These compositions exhibit good film strength while avoiding undesired rheology modification by the addition of inorganic colloidal material. These compositions also exhibit very good resistance to smudging, smearing and flaking once the composition has been applied to the eyelashes.

BACKGROUND OF THE DISCLOSURE

Eye make-up compositions, including mascara, are significant products in the cosmetics market. Mascara enhances the beauty of the wearer by coating the eye lashes, or in some instances eyebrows, with color. In spite of their beauty enhancing characteristics, conventional eye make-up preparations have been criticized for their failure to maintain the desired affect during long periods of wear. Problems such as staining and smearing (commonly referred to as smudging) and flaking of the mascara from the eyelashes are common complaints.

Thickeners, such as organically treated argyles or clays, are known for use in mascara compositions in order to create desired viscosity of the composition, modify its flow properties and improve stability of the composition by suspending materials commonly found in mascara, such as pigments. For example, clays that are reaction products of an organic quaternary amine with either hectorite or bentonite clay, are capable of swelling and gelling various hydrocarbon and natural oils, solvents and synthetic liquids in cosmetic compositions such as mascaras; see "Controlling Cosmetic Rheology," NL Industries (1985), p 6.

Japanese Patent Application 07-267,817 discloses waterproof oil-in-water mascara compositions comprising water soluble, water insoluble polymers, hydrophilic and hydrophobic clays in their respective internal and external phases of the compositions. However, it is known that mascaras containing clays in the external phase increase the viscosity in such a way that it becomes very difficult to wet the lashes with the mascara. This results in the consumer taking longer time to apply the mascara resulting in the lashes clumping.

SUMMARY OF THE INVENTION

The present invention is for emulsion-form mascara compositions providing surprising beauty and wear benefits as compared to compositions known in the art. These compositions comprise inorganic colloidal materials that are introduced into the internal phase of the emulsion composition. Said inorganic colloidal materials, naturally or treated to be compatible with the internal phase, are used in an amount necessary to provide good film strength for the applied composition. The addition of inorganic colloidal material in this manner, however, does not negatively impact the desired rheology of the composition.

All percentages are by weight of the cosmetic composition unless otherwise indicated. All solutions are on a weight/weight concentration unless otherwise indicated.

DETAILED DESCRIPTION OF THE INVENTION

As used herein an emulsion composition means a composition comprising at least two distinct phases known as the internal phase and the external phase.

As used herein the term "internal phase" of the emulsion composition is the phase wherein the material or materials of said phase are dispersed as small particles within another distinct phase of the emulsion composition.

As used herein the term "external phase" of the emulsion composition is the phase wherein the internal phase is dispersed within.

Inorganic Colloidal Material

The present invention relates to emulsion mascara compositions comprising from about 0.05% to 20% inorganic colloidal material in the internal phase of the emulsion. As previously disclosed inorganic colloidal material such as clays are known for use as compositional rheology modifiers. These materials, such as clays, are used to thicken or gel either or both the internal and, or the external phase of such compositions. However, it has been found that such inorganic colloidal material when incorporated into a composition in sufficient amounts can affect the film-forming character of the composition. Strengthening of formed films has been observed in the plastics industry; see Tie Lan and Dr. T.J. Pinnavaia (Dept. of Chemistry), CMS Courier, Vol I Issue 8, July 1994 ; "Polymer-Clay Nanocomposite Materials", pp.2-3 disclosing the addition of organophilic clays to nylon-6, improve the tensile strength, modulus, rheology and thermal capacity of plastics used in automobile production.

It has surprisingly been found that when inorganic colloidal materials, compatible with the internal phase of a mascara composition, are added to said internal phase, the resulting film formed upon the eyelashes has improved tensile strength, thereby improving the longevity of the composition. Furthermore, the rheology of the composition is not negatively impacted; i.e. the viscosity of the composition is not appreciably increased. Lastly, upon drying, the inorganic colloidal materials are complexed within the film rather than caking on the film. This avoids flaking of the composition from the lashes as the external phase evaporates.

The inorganic colloidal materials are used at levels from about 0.05% to about 20%, preferably 1% to about 10% and most preferably from about 2% to about 5% of the compositions of the present invention. The weight percentages above are based on the inorganic materials in neat form as opposed to the colloidal dispersion form that they may be purchased as. While these materials are commercially available, they are not necessarily limited to commercially available material.

The inorganic colloidal material can be incorporated into either oil or water provided such materials is either naturally compatible or can be modified or treated so as to be compatible with either oil or water. The inorganic colloidal material of the present invention is selected from the group consisting of clays, amorphous silicon dioxide, oxides of aluminum and magnesium, hydroxides of aluminum and magnesium and mixtures thereof.

1. Clays

Clays are generally considered amorphous and crystalline. Among the amorphous clays are those that belong to the allophane group. Clays useful in the present invention include crystalline types of clays selected from the group consisting of three-layer type clays, regular mixed-layer type clays, chain structure type clays and mixtures thereof; see Grim, R.E. Mineralogy, Second Edition, McGraw-Hill, N.Y., 1968.

Hydrophobic inorganic colloidal materials include clays modified by treatment with compounds selected from the group consisting of quaternary amines, tertiary amines, amine acetates, imidazolines, amine soaps, fatty sulfates, alkyl aryl sulfonates, amine oxides, ethoxylated alkyl phenols and mixtures thereof. These materials are combined with the above clays under ion-exchange conditions renders the clays hydrophobic. Said materials are also known as organophilic clays, or organoclays for short. Alternatively, clays may be surface-treated with silicones, perfluorinated compounds, lecithin, and amino acids to make them hydrophobic or organophilic.

Many of the above hydrophobic clays can also be purchased as pre-dispersed hydrophobic or organophilic clay in either an oil or an organic solvent. The materials are in the form of a heavy paste that can be readily dispersed into the formulation. Such materials include Mastergels by Rheox, United Catalysts, and Southern Clay.

Clays used in this invention can contain an effective amount of "activator" for the organically modified hectorite and bentonite clays. Activators used in the present invention include propylene carbonate, ethanol and mixtures thereof. The preferred activator for use is propylene carbonate. Preferably, the ratio of clay to activator is about 3:1.

A. Three-layer type clays are expanding lattice clays.

The three-layer type clays are expanding lattice clays are selected from the group consisting of equi-dimensional smectite clays (Diocahedral), elongate smectite clays (Triocahedral) and mixtures thereof.

(1) Equi-dimensional smectite clays are aluminum silicates selected from the group consisting of bentonite and montmorillonite.

Hydrophilic bentonites useful in the present invention include Volclay MPS-1, Volclay NF-BC and Polargel, available from American Colloid Co; Bentolite L and H, and Bentolite WH, available from Southern Clay; and Veegum HS, available from R.T. Vanderbilt.

Hydrophilic montmorillonites useful in the present invention include Gelwhite L, Gelwhite GP, and Gelwhite H, Mineral Colloid BP and Mineral Colloid MO, all available from Southern Clay.

Hydrophobic bentonites are selected from the group consisting of quaternium-18 bentonite, quaternium-18 benzalkonium bentonite, stearylkonium bentonite, and mixtures thereof. The quaternium-18 bentonites include Bentone 34 available from Rheox and Claytone XL, Claytone 34 and Claytone 40, all available from Southern Clay. The quaternium-18 benzalkonium bentonites include Claytone HT, Claytone GR and Claytone PS, all available from Southern Clay. The stearylkonium bentonites include Claytone APA, Claytone AF both available from Southern Clay and Baragel 24 available from Rheox.

(2) Elongate smectite clays, generally described as aluminum silicates, are selected from the group consisting of hectorite, synthetic hectorite, magnesium aluminum silicate and mixtures thereof.

Hydrophilic hectorites include Hectabrite AW, Hectabrite DP, and Hectalite 200, all available from ACC; and Bentone EW and Bentone MA, both available from Rheox. Hydrophilic synthetic hectorites include Laponite D, Laponite XLG, Laponite XLS, and Laponite 508, all available from Southern Clay.

Hydrophilic magnesium aluminum silicates include Magnabrite available from ACC, Macaloid available from Rheox; Gelwhite MAS-L and MAS-H, available from Southern Clay; Veegum, Veegum D, Veegum F, Veegum HV, Veegum K, and Veegum Ultra, all available from R. T. Vanderbilt.

Hydrophobic hectorites are selected from the group consisting of dihydrogenated tallow benzylmonium hectorite, quaternium-18 hectorite, stearylkonium hectorite and mixtures thereof. Dihydrogenated tallow benzylmonium hectorites include Bentone SD-3 available from Rheox. Quaternium-18 hectorite includes Bentone 38, Bentone Gel MIO, Bentone Gel MIO A-40, Bentone Gel SS71 and S-130, and Bentone Gel VS-5, all available from Rheox. Stearylkonium hectorites include Bentone 27, Bentone Gel IPM, Bentone Gel CAO, Bentone Gel LOI and Bentone Gel TN, all available from Rheox.

B. Chain Structure Clays

Chain structure clays are also known as attapulgite clays.

Hydrophilic attapulgite clays include Min-ugel AR, LF, and 400, available from Floridin Co.

Hydrophobic attapulgite clays include Vistrol 1265, available from Cimbar.

2. Amorphous Silicone Dioxide

Among the materials useful as the inorganic colloidal materials of the present invention are amorphous silicon dioxide. Amorphous silicon dioxide includes hydrated silica and silica.

A. Hydrated Silica

Hydrated silica, a generic CTFA name applied to all synthetic silicon dioxides produced via a liquid process. The hydrated silica useful in the present invention includes precipitated silica and silica gel.

(1) Hydrophilic precipitated silica includes Zeothix 265, Zeosyl 200, Zeodent 163 and Zeofree 153 available from J. M. Huber.

(2) Hydrophobic precipitated silica is available from Tulco as Tullanox HM-250.

(3) Hydrophilic silica gel is formed in liquid medium, as a sheet, during manufacture and includes Sylox 2 and 15, Sylodent 2, 15, 700, and 704 available from W. R. Grace.

B. Silica

Silica useful in the present invention is fumed silica. Fumed silica, also known as silica or pyrogenic silica is synthetic silicon dioxide typically prepared by steam hydrolysis of silicon tetrachloride at high temperatures.

(1) Hydrophobic pyrogenic silica products are obtained by reacting the silanol groups on the silica surface with chlorosilane. About 75% of the silanol groups on the surface are replaced by dimethyl silyl groups or modified with hexamethyldisilazane-surface treatment.

(2) Hydrophilic fumed silica is available from Cabot as Cab-o-sil M-5, H-5, HS-5, EH-5, L-90, and Cab-o-Sperse; Degussa as Aerosil 200, 200V, 300; Wacker-Chemie GmbH as Wacker HDK H20, N20, V15.

(3) Hydrophobic fumed silica is available from Degussa as Aerosil R812 and R972; and Cabot as Cab-o-sil TS-530.

3. Oxides and Hydroxides of Aluminum and Magnesium

The oxides and hydroxides of aluminum and magnesium that are useful in the present invention include aluminum hydroxides, magnesium hydroxides, and aluminum/magnesium complex hydroxides.

A. Aluminum Hydroxides

Aluminum hydroxides of the present invention are hydrated aluminum oxide pigments are white crystalline products of extremely fine and uniform particle size. The lattice of hydrated alumina consists of hydroxyl ions in coordination with an aluminum ion. Also, the

amorphous hydrated aluminas which often coexist with the crystallized varieties in the preparation of alumina gels.

(1) Hydrophilic aluminum hydroxides of the present invention include Catapal⁺ Dispal Aluminas and Dispersal Alumina available from Vista Chemical Company.

(2) Hydrophobic aluminum hydroxides of the present are the same as those above, except the material is complexed with stearic acid.

B. Aluminum/Magnesium Hydroxides

Aluminum/magnesium hydroxides are also useful in the present invention.

(1) Hydrophobic aluminum/magnesium hydroxides include Gilugel IPM, Gilugel IPP, Gilugel Min and Gilugel Sil 5, all available from Giuliani.

Additional Ingredients

Additional ingredients useful in the present invention are selected based on either the various forms or attributes the composition is to have. A list of such materials follows (said list is not all-encompassing):

1. Fatty Materials

The mascara compositions of the present invention can additionally include fatty materials. These materials may be in the internal phase, the external phase, or both the internal and external phases of the emulsion provided they are compatible with the phase they are introduced into. Preferably the solid fatty material are combined with other oily materials that go into the internal phase of a oil-in-water form of the present invention.

The fatty materials may comprises from about 0.05% to 50%, preferably from about 1.0% to 40%, and most preferably from about 2% to 25% by weight of the composition. The fatty materials are selected from the group consisting of waxes, fats, fatty acids, fatty alcohols and mixtures thereof.

a. Waxes

Waxes are defined as lower-melting organic mixtures or compounds of high molecular weight, solid at room temperature and generally similar in composition to fats and oils except that they contain no glycerides. Some are hydrocarbons, others are esters of fatty acids and alcohols. Waxes useful in the present invention are selected from the group consisting of animal waxes, vegetable waxes, mineral waxes, various fractions of natural waxes, synthetic waxes petroleum waxes, ethylenic polymers, hydrocarbon types such as Fischer-Tropsch waxes, silicone waxes, and mixtures thereof wherein the waxes have a melting point between 40°C and 120°C and a needle penetration, as measured according to the American standard ASTM D5, of 3 to 40 at 25°C. The principle of the measurement of the needle penetration according to the standards ASTM D5 consists in measuring the depth, expressed in tenths of a millimeter, to which a standard needle (weighing 2.5 g and placed in a needle holder weighing 47.5 g, i.e. a total of 50 g) penetrates when placed on the wax for 5 seconds.

The specific waxes useful in the present invention are selected from the group consisting of beeswax, lanolin wax, shellac wax (animal waxes); carnauba, candelilla, bayberry (vegetable waxes);

ozokerite, ceresin, (mineral waxes); paraffin, microcrystalline waxes (petroleum waxes); polyethylene, (ethylenic polymers); polyethylene homopolymers (Fischer-Tropsch waxes); C24-45 alkyl methicones (silicone waxes); synthetic waxes, and mixtures thereof. Most preferred are beeswax, lanolin wax, carnauba, candelilla, ozokerite, ceresin, paraffins, microcrystalline waxes, synthetic waxes, polyethylene, C24-45 alkyl methicones, and mixtures thereof.

b. Fats

Fats useful in the present invention are triacylglyceride or triglyceride esters formed by an esterification reaction of fatty acids with glycerol. The fatty acids have carbon chain greater than about 12, such as stearic and palmitic fatty acids. The higher fatty acids used to form the are typically derived from marine, animals and plant sources. For more information regarding triglyceride oils, their sources and processing, refer to Bailey, "Industrial Oil and Fats Products", Interscience Publications; incorporated herein by reference. Such triglyceride esters are solids at room temperature and exhibit crystalline structure.

——Fats are glyceryl esters of higher fatty acids such as stearic and palmitic. Such esters and their mixtures are solids at room temperature and exhibit crystalline structure.

The fats employed according to the invention are selected from the group consisting of fats derived from animals, vegetables, synthetically derived fats, and mixtures thereof wherein said fats have a melting point from about 40°C to about 100°C and a needle penetration, as measured according to the American standard ASTM D5, from about 3 to about 40 at 25°C. Preferably the fats selected for use in the present invention are selected from the group consisting of glyceryl monostearate, glyceryl distearate, glyceryl tristearate, palmitate esters of glycerol, C18-36 triglycerides, glycerol monobehenate, glyceryl tribehenate and mixtures thereof.

c. Fatty Acids and Alcohols

The fatty acids employed according to the invention are selected from the group consisting of fatty acids derived from animals, vegetables, synthetically derived fatty acids, and mixtures thereof. Preferably, the fatty acids selected for use in the present invention are selected from the group consisting of stearic acid, oleic acid, isostearic acid, palmitic acid, myristic acid, hydroxystearic acid, behenic acid, arachidic acid, lignoceric acid and lauric acid.

The fatty alcohols employed according to the invention are selected from the group consisting of fatty alcohols derived from animals, vegetables, synthetically derived fatty alcohols, and mixtures thereof wherein said fatty alcohols have a melting point from about 30°C to about 100°C and a needle penetration, as measured according to the American standard ASTM D5, from about 3 to about 40 at 25°C. Preferably, the fatty alcohols selected for the use in the present invention are selected from the group consisting of myristyl alcohol, cetyl alcohol, stearyl alcohol, hydroxystearyl alcohol, arachidyl alcohol, behenyl alcohol, and lignoceryl alcohol.

2. Film-Forming Polymers

The mascara composition that may be useful in the present invention may comprises various film forming polymeric materials to enhance the benefits of the present invention. Such film forming materials are disclosed in co-pending patent applications USSN 08/431,343, filed April 28, 1995; herein incorporated by reference. Such film-forming polymers include both water-soluble and water insoluble polymeric materials.

Water-insoluble materials useful in the present invention include latexes, or aqueous emulsions or dispersions of polymeric materials comprising polymers formed from monomers, said monomer derivatives, mixtures of said monomers, mixtures of said monomer derivatives, natural polymers and mixtures thereof. Said polymeric material also include chemically modified versions of the above polymers. These water-insoluble polymeric materials of the present invention comprise from about 3% to about 60% by weight of the composition. Other water-insoluble polymeric material include monomers selected from the group consisting of aromatic vinyls, dienes, vinyl cyanides, vinyl halides, vinylidene halides, vinyl esters, olefins and their isomers, vinyl pyrrolidone, unsaturated carboxylic acids, alkyl esters of unsaturated carboxylic acids, hydroxy derivatives of alkyl esters of unsaturated carboxylic acids, amides of unsaturated carboxylic acids, amine derivatives of unsaturated carboxylic acids, glycidyl derivatives of alkyl esters of unsaturated carboxylic acids, olefinic diamines and isomers, aromatic diamines, terephthaloyl halides, olefinic polyols and mixtures thereof. Specific polymeric material useful in the present invention include, but, are not necessarily limited to the Syntran Series (of latexes) from Interpolymer Corporation, for example Syntran 5170, Syntran EX33-1, Syntran EX30-1, and Syntran 5130 (acrylates copolymers formulated with added ammonia, propylene glycol, preservative and surfactant) and Syntran 5002 (styrene/acrylates/methacrylate copolymer formulated with added ammonia, propylene glycol, preservative and surfactant); the Primal Series (acrylic latexes) from Rohm & Haas; Appretan V (styrene/acrylic ester copolymer latexes) from Hoechst; Vinac (polyvinylacetate latex) from Air Products; UCAR latex resin 130 (polyvinylacetate latex) from Union Carbide; Rhodopas A Series (polyvinylacetate latexes) from Rhone Poulenc; Appretan MB, EM, TV (vinyl acetate / ethylene copolymer latexes) from Hoechst; 200 Series (styrene/butadiene copolymer latexes) from Dow Chemical; Rhodopas SB Series (styrene/butadiene copolymer latexes) from Rhone Poulenc; Witcobond (polyurethane latexes) from Witco; Hycar Series (butadiene/acrylonitrile copolymer latexes) from Goodrich; Chemigum Series (butadiene/acrylonitrile copolymer latexes) from Goodyear; and Neo Cryl (styrene/acrylates/acrylonitrile copolymer latex) from ICI Resins.

Water-insoluble polymeric are those soluble in water, water-cosolvent mixtures, such as ethanol/water, pH adjusted water, and/or tempered solutions of the above to facilitate solubilization of the polymers. Water-s luble, film forming polymers comprise from about 0.1% t about 50%, preferably from about 1% to about 30%, and most preferably from about 1.5% to about 10% of the composition.

The film forming, water-soluble polymers comprise polymers formed from monomers, said monomer derivatives, mixtures of said monomers, mixtures of said monomer derivatives, natural polymers and mixtures thereof. The water-soluble, film forming polymers disclosed herein also include chemically modified versions of the above disclosed polymers. Said monomers are selected from the group consisting of olefin oxides, vinyl pyrrolidone, vinyl esters, vinyl alcohols, vinyl cyanides, oxazilines, carboxylic acids and esters and mixtures thereof. Preferred vinyl pyrrolidone polymers are selected from the group consisting of polyvinylpyrrolidone, vinyl acetate/vinyl pyrrolidone copolymer and mixtures thereof. Preferred polyvinyl esters are selected from the group consisting of vinyl acetate/crotonic acid copolymer, vinyl acetate/crotonic acid/vinyl neodecanoate copolymer and mixtures thereof. Preferred vinyl alcohol polymers are selected from the group consisting of vinyl alcohol/vinyl acetate, vinyl alcohol/poly(alkyleneoxy)acrylate, vinyl alcohol/vinyl acetate/poly(alkyleneoxy)acrylate and mixtures thereof. Preferred olefin oxides are selected from the group consisting of polyethylene oxide, polypropylene oxide and mixtures thereof. Preferred polycarboxylic acids and their esters are selected from the group consisting of acrylates, acrylates/octylacrylamide copolymers and mixtures thereof. The preferred oxazilines is polyoxazilines.

Water-soluble, film forming polymers of the present invention comprise natural polymers selected from the group consisting of cellulose derivatives, algin and its derivatives, starch and its derivatives, guar and its derivatives, shellac polymers, and mixtures thereof. Preferred cellulose derivatives are selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, hydroxypropyl methylcellulose, ethylhydroxyethyl cellulose and mixtures thereof.

Specific water-soluble, film-forming polymers useful in the present invention include, but are not necessarily limited to Polyox WSR (polyethyleneoxide polymers) from Union Carbide; Natrosol 250 (hydroxyethylcellulose) from Aqualon; Cellosize (hydroxyethylcellulose) from Union Carbide; Airvol (polyvinylalcohol copolymer) from Air Products and Chemicals, preferably all commercially available grades like Airvol 103, Airvol 325, Airvol 540, Airvol 523S; Vinex from Air Products and Chemicals, preferably all commercially available grades such as Vinex 1003, Vinex 2034, Vinex 2144, Vinex 2019; PEOX (polyethyloxazoline) from Polymer Chemistry Innovations; PVP K Series (polyvinylpyrrolidone) from International Specialty Products; Luviskol K Series (polyvinylpyrrolidone) from BASF; PVP/VA (vinyl acetate/vinyl pyrrolidone copolymer) from International Specialty Products, preferably grades W-735 and S-630; and Gantrez (copolymers of methyl vinyl ether/maleic anhydride) from International Specialty Products; Carboset Series (acrylate copolymer) from BF Goodrich; Resyn Series (vinyl acetate/crotonate copolymers) from National Starch and Chemical Corporation; Versatyl and Dermacryl Series (acrylate/octylacrylamide copolymers) from National Starch and Chemical Corporation.

3. Emulsifiers

A component typically found in an emulsion composition is an emulsifier. In these embodiments of the present invention, emulsifiers are typically used at levels from about 0.1% to about 40%, preferably from about 0.5% to about 30%.

There are many factors which determine whether the water or the oil end up the dispersed or continuous phase. However, the single most important factor is the hydrophilic-lipophilic balance value (herein referred to as HLB) of the emulsifier; Wilkinson and Moore, Harry's Cosmeticology, 7th Ed. 1982, p. 738; Schick and Fowkes, Surfactant Science Series, Vol. 2, Solvent Properties of Surfactant Solutions, p 607. Said emulsifiers include those disclosed in the C.T.F.A. Cosmetic Ingredient Handbook, 1992, pp. 587-592; and Remington's Pharmaceutical Sciences, 15th Ed. 1975, pp. 335-337; both incorporated herein by reference. Said emulsifiers are selected from those known in the art and mixtures thereof including those in McCutcheon's Volume 1, Emulsifiers & Detergents, 1994, North American Edition, pp. 236-239; herein incorporated by reference.

4. Pigments

The solids component of the mascara compositions of the present invention contain cosmetically acceptable pigments selected from the group consisting of inorganic pigments, organic pigments, and pearlescent pigments. When employed, the pigments are present in proportions depending on the color and the intensity of the color which it is intended to produce. The level of pigments in the solid portion of the mascara composition of present invention is from about 3% to about 30%, preferably from about 5% to about 20%. Pigments are selected from the group consisting of inorganic pigments, organic lake pigments, pearlescent pigments, and mixtures thereof. Said pigments may optionally be surface-treated within the scope of the present invention but are not limited to treatments such as silicones, perfluorinated compounds, lecithin, and amino acids.

Inorganic pigments useful in the present invention include those selected from the group consisting of rutile or anatase titanium dioxide, coded in the Color Index under the reference CI 77,891; black, yellow, red and brown iron oxides, coded under references CI 77,499, 77, 492 and, 77,491; manganese violet (CI 77,742); ultramarine blue (CI 77,007); chromium oxide (CI 77,288); chromium hydrate (CI 77,289); and ferric blue (CI 77,510) and mixtures thereof.

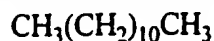
The organic pigments and lakes useful in the present invention include those selected from the group consisting of D&C Red No. 19 (CI 45,170), D&C Red No. 9 (CI 15,585), D&C Red NO. 21 (CI 45,380), D&C Orange No. 4 (CI 15,510), D&C Orange No. 5 (CI 45,370), D&C Red No. 27 (CI 45,410), D&C Red No. 13 (CI 15,630), D&C Red No. 7 (CI 15,850), D&C Red No. 6 (CI 15,850), D&C Yellow No. 5 (CI 19,140), D&C Red No. 36 (CI 12,085), D&C Orange No. 10 (CI 45,425), D&C Yellow N . 6 (CI 15,985), D&C Red N . 30 (CI 73,360), D&C Red No. 3 (CI 45,430) and the dye or lakes based on Cochineal Carmine (CI 75,570) and mixtures thereof.

The pearlescent pigments useful in the present invention include those selected from the group consisting of the white pearlescent pigments such as mica coated with titanium oxide, bismuth

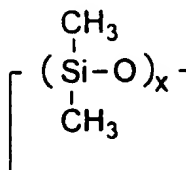
oxychloride, colored pearlescent pigments such as titanium mica with iron oxides, titanium mica with ferric blue, chromium oxide and the like, titanium mica with an organic pigment of the above-mentioned type as well as those based on bismuth oxychloride and mixtures thereof.

5. Volatile Fluids

Volatile fluids are particularly useful optional ingredient. Said volatile fluids are selected from the group consisting of volatile hydrocarbons, volatile silicones and mixtures thereof. Volatile hydrocarbon fluids that may be used in the present invention include isododecane, petroleum distillates, and isoparaffins. Preferred are isododecane and petroleum distillates. Isododecane is available as for example Permethyl 99A from Permethyl Corporation corresponding to the formula:



Volatile silicone fluids include cyclomethicones having 3, 4 and 5 membered ring structures corresponding to the formula:



where X is from about 3 to about 6. Said volatile silicones include 244 Fluid, 344 Fluid and 345 Fluid from Dow Corning Corporation.

In an oil-in-water mascara emulsion composition, volatile fluids, such as the volatile silicone, and fatty materials are gelled with a hydrophobically-modified fumed silica powder in the internal phase of the composition. In another embodiment of the present invention, a volatile fluid may be used within the external phase of a water-in-oil composition to extend the fatty materials so that a large volume external phase is created for emulsifying the water/inorganic colloid slurry.

6. Miscellaneous

In the present invention numerous optional ingredients may be added to provide additional benefits other than that attributed to the invention as defined above. For example, it is preferred that the mascara composition of the present invention contain a preservative system to inhibit microbiological growth and maintain the integrity of the product. In the present invention, the preservative system does not have a detrimental effect on the composition.

Any optional ingredients known to those skilled in the art may also be used in the invention. Examples of optional ingredients are cosmetic fillers including, but not limited to, mica, talc, nylon, polyethylene, silica beads, polymethacrylate, kaolin, teflon; cosmetic preservatives including, but not limited to, methylparaben, propylparaben, butylparaben, ethylparaben, potassium sorbate, trisodium EDTA, phenoxyethanol, ethyl alcohol, diazolidinyl urea, benzyl alcohol, imidazolidinyl urea, quaternium-15. Also, additives such as tall oil glycerides are easily incorporated into emulsion forms of the mascara.

EXAMPLES

A. Oil-in-Water Mascara Compositions

Example #1

Ingredient	W/W%
Deionized Water	49.96
Synthetic Wax	7.00
Glycerol Monostearate	3.00
Carnauba Wax	2.00
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid ²	2.75
Oleic Acid	0.75
Triethanolamine	1.75
Trisodium EDTA	0.10
Polyvinyl Alcohol	3.00
Propylene Glycol	2.00
Simethicone ²	0.20
Ammonium Acrylates Copolymer ³	12.20
Ethyl Alcohol ⁴	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁵	0.28

1. available as Bentone 38 from Rheox.

2. available as Antifoam from Dow Corning.

3. available as Syntran EX33-I (41% Stock Solution) from Interpolymer Corporation.

4. available as SD Alcohol 40-B from Warner Graham Company.

5. available as dl-Panthenol from Roche.

Example #2

Ingredient	W/W%
Deionized Water	40.18
Synthetic Wax	1.50
Glycerol Monostearate	7.25

Carnauba Wax	2.00
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	3.75
Propylene Carbonate	1.25
Stearic Acid	2.75
Oleic Acid	1.00
Triethanolamine	1.75
Xanthan Gum	0.10
Trisodium EDTA	0.10
Polyvinyl Alcohol	1.50
Acrylates Copolymer ²	5.17
Propylene Glycol	2.00
Simethicone ³	0.20
Ammonium Acrylates Copolymer ⁴	18.29
Lecithin	1.25
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 38 from Rheox.

2. available as Carboset xpd-1616 (29% Stock Soln) from BF Goodrich.

3. available as Antifoam from Dow Corning.

4. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.

5. available as SD Alcohol 40-B from Warner Graham Company.

6. available as dl-Panthenol from Roche.

Example #3

Ingredient	W/W%
Deionized Water	41.95
Synthetic Wax	3.00
Glycerol Monostearate	6.00
Carnauba Wax	4.50
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	2.25

Propylene Carb nate	0.75
Stearic Acid	2.75
Oleic Acid	0.75
Triethanolamine	1.75
Trisodium EDTA	0.10
Polyvinyl Alcohol	4.00
Acrylates Copolymer ²	1.72
Propylene Glycol	2.00
Simethicone ³	0.20
Ammonium Acrylates Copolymer ⁴	17.07
Lecithin	1.25
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 38 from Rheox.

2. available as Carboset xpd 1616 (29% Stock Soln) from BF Goodrich.

3. available as Antifoam from Dow Corning.

4. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.

5. available as SD Alcohol 40-B from Warner Graham Company.

6. available as dl-Panthenol from Roche.

Example #4

Ingredient	W/W%
Deionized Water	41.15
Synthetic Wax	4.00
Glycerol Monostearate	6.00
Ozokerite Wax	3.75
Black Iron Oxide	9.00
Stearalkonium Hectorite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid	2.75
Oleic Acid	1.00
Triethanolamine	1.75

Trisodium EDTA	0.10
Propylene Glycol	1.00
Simethicone ²	0.20
Ammonium Acrylates Copolymer ³	19.51
Lecithin	1.75
Ethyl Alcohol ⁴	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁵	0.28

1. available as Bentone 27 from Rheox.

2. available as Antifoam from Dow Corning.

3. available as Syntran 5170 (41% Stock Solution) from Interpolymer Corporation.

4. available as SD Alcohol 40-B from Warner Graham Company.

5. available as dl-Panthenol from Roche.

Example #5

Ingredient	W/W%
Deionized Water	37.43
Synthetic Wax	3.00
Glycerol Monostearate	7.00
Carnauba Wax	1.00
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	3.75
Propylene Carbonate	1.25
Stearic Acid	2.75
Oleic Acid	0.75
Triethanolamine	1.75
Xanthan Gum	0.40
Trisodium EDTA	0.10
Polyvinyl Alcohol	1.00
Acrylates Copolymer ²	6.90
Propylene Glycol	2.00
Simethicone ³	0.20
Ammonium Acrylates Copolymer ⁴	19.51

Lecithin	1.25
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 38 from Rheox.

2. available as Carboset xpd-1616 (29% Stock Soln) from BF Goodrich.

3. available as Antifoam from Dow Corning.

4. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.

5. available as SD Alcohol 40-B from Warner Graham Company.

6. available as dl-Panthenol from Roche.

Example #6

Ingredient	W/W%
Deionized Water	40.42
Synthetic Wax	3.00
Glycerol Monobehenate	5.00
Carnauba Wax	1.00
Micronized Black	6.50
Stearalkonium Hectorite ¹	6.00
Propylene Carbonate	2.00
Stearic Acid	2.75
Oleic Acid	1.00
Triethanolamine	1.75
Xanthan Gum	0.10
Trisodium EDTA	0.10
Hydroxyethyl Cellulose	1.00
Acrylates Copolymer ²	6.90
Propylene Glycol	1.00
Dimethicone ³	0.20
Ammonium Acrylates Copolymer ⁴	17.07
Lecithin	1.50
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65

Phenoxyethan ¹	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 27 from Rheox.
2. available as Carboset xpd-1616 (29% Stock Soln) from BF Goodrich.
3. available as Antifoam from Dow Corning.
4. available as Syntran EX30-1 (41% Stock Solution) from Interpolymer Corporation.
5. available as SD Alcohol 40-B from Warner Graham Company.
6. available as dl-Panthenol from Roche.

Example #7

Ingredient	W/W%
Deionized Water	41.22
Synthetic Wax	5.00
Glycerol Monostearate	7.50
Carnauba Wax	2.75
Black Iron Oxide	7.50
Quaternium-18 Hectorite ¹	1.00
Propylene Carbonate	0.33
Stearic Acid	2.75
Oleic Acid	1.00
Triethanolamine	1.75
Xanthan Gum	0.40
Trisodium EDTA	0.10
Polyvinyl Alcohol	4.00
Acrylates Copolymer ²	1.72
Propylene Glycol	2.00
Antifoam	0.20
Ammonium Acrylates Copolymer ³	17.07
Lecithin	1.00
Ethyl Alcohol ⁴	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20

Ethylparaben	0.20
Panthenol ⁵	0.28

1. available as Bentone 38 from Rheox.
2. available as Antifoam from Dow Corning.
3. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.
4. available as SD Alcohol 40-B from Warner Graham Company.
5. available as dl-Panthenol from Roche.

Example #8

Ingredient	W/W%
Deionized Water	41.18
Synthetic Wax	1.50
Glycerol Monostearate	6.50
Carnauba Wax	2.75
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid	2.75
Oleic Acid	1.00
Triethanolamine	1.75
Trisodium EDTA	0.10
Polyvinyl Alcohol	2.50
Acrylates Copolymer ²	1.72
Propylene Glycol	2.00
Semithicone ³	0.20
Ammonium Acrylates Copolymer ⁴	19.51
Lecithin	1.25
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 38 from Rheox.
2. available as Carboset xpd-1616 (29% Stock Soln) from BF Goodrich.
3. available as Antifoam from Dow Corning.

4. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.
5. available as SD Alcohol 40-B from Warner Graham Company.
6. available as dl-Panthenol from Roche.

Example #9

Ingredient	W/W%
Deionized Water	41.88
Synthetic Wax	2.00
Glycerol Monostearate	5.25
Carnauba Wax	3.00
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid	2.75
Oleic Acid	0.80
Triethanolamine	1.75
Trisodium EDTA	0.10
Polyvinyl Alcohol	2.50
Acrylates Copolymer ²	1.72
Propylene Glycol	2.00
Semithicone ³	0.20
Ammonium Acrylates Copolymer ⁴	19.51
Lecithin	1.25
Ethyl Alcohol ⁵	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁶	0.28

1. available as Bentone 38 from Rheox.
2. available as Carboset xpd-1616 (29% Stock Soln) from BF Goodrich.
3. available as Antifoam from Dow Corning.
4. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.
5. available as SD Alcohol 40-B from Warner Graham Company.
6. available as dl-Panthenol from Roche.

Example #10

Ingredient	W/W%
Deionized Water	49.96
Synthetic Wax	7.00
Glycerol Monostearate	3.00
Carnauba Wax	2.00
Black Iron Oxide	7.25
Quaternium-18 Hectorite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid	2.75
Oleic Acid	0.75
Triethanolamine	1.75
Trisodium EDTA	0.10
Propylene Glycol	2.00
Simethicone ²	0.20
Ammonium Acrylates Copolymer ³	15.20
Ethyl Alcohol ⁴	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁵	0.28

1. available as Bentone 38 from Rheox.

2. available as Antifoam from Dow Corning.

3. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.

4. available as SD Alcohol 40-B from Warner Graham Company.

5. available as dl-Panthenol from Roche.

Example #11

Ingredient	W/W%
Deionized Water	52.74
Synthetic Wax	4.50
Glycerol Monostearate	5.25
Carnauba Wax	2.00
Black Iron Oxide	10.00
Stearalkonium Hectorite ¹	3.00

Propylene Carbonate	1.00
Stearic Acid	3.00
Oleic Acid	1.00
Stearyl Alcohol	1.50
Triethanolamine	1.75
Xanthan Gum	0.50
Trisodium EDTA	0.10
Polyvinyl Alcohol	7.50
Propylene Glycol	2.00
Simethicone ²	0.20
Lecithin	1.25
Ethyl Alcohol ³	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁴	0.28

1. available as Bentone 27 from Rheox.

2. available as Antifoam from Dow Corning.

3. available as SD Alcohol 40-B from Warner Graham Company.

4. available as dl-Panthenol from Roche.

Example #12

Ingredient	W/W%
Deionized Water	62.69
Paraffin Wax	4.00
Glycerol Behenate	2.00
Beeswax	2.00
Carnauba Wax	4.50
Black Iron Oxide	9.25
Fumed Silica ¹	0.75
Quaternium-18 Hectorite ²	2.00
Propylene Carbonate	1.50
Stearic Acid	2.75
Oleic Acid	0.75
Triethanolamine	1.75

Trisodium EDTA	0.10
Propylene Glycol	2.00
Lecithin	1.25
Ethyl Alcohol ³	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10
Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁴	0.28

1. available as Aerosil R 972 from Degussa

2. available as Bentone 38 from Rheox.

3. available as SD Alcohol 40-B from Warner Graham Company.

4. available as dl-Panthenol from Roche.

Example #13

Ingredient	W/W%
Deionized Water	41.15
Synthetic Wax	2.75
Glycerol Monostearate	6.00
Carnauba Wax	3.75
Black Iron Oxide	7.25
Quaternium-18 Bentonite ¹	4.00
Propylene Carbonate	1.33
Stearic Acid	2.75
Oleic Acid	1.00
Polyvinyl Alcohol	3.00
Triethanolamine	1.75
Trisodium EDTA	0.10
Propylene Glycol	1.00
Simethicone ²	0.20
Ammonium Acrylates Copolymer ³	19.51
Lecithin	1.75
Ethyl Alcohol ⁴	1.00
Benzyl Alcohol	0.65
Phenoxyethanol	0.28
Propylparaben	0.10

Methylparaben	0.20
Ethylparaben	0.20
Panthenol ⁵	0.28

1. available as Bentone 34 from Rheox.
2. available as Antifoam from Dow Corning.
3. available as Syntran EX33-1 (41% Stock Solution) from Interpolymer Corporation.
4. available as SD Alcohol 40-B from Warner Graham Company.
5. available as dl-Panthenol from Roche.

PROCESSING DIRECTIONS

Place the waxes and fats into a vessel equipped with heating and mixing. Heat the waxes and fats with low speed mixing to a temperature sufficient to liquefy the mixture. Continue mixing until homogeneous. Add oil-dispersible or oil-soluble components such as pigments and organophilic clays and clay activators. Increase the mixing rate to high and mix until the pigments are uniformly dispersed throughout the lipid mixture; about 30-35 minutes. Add emulsifiers to said lipid mixture while continuing to mix.

In a second vessel equipped with mixing and heating, add water followed by any water-soluble, film-forming polymers used, and the remainder of the water-dispersible components. The mixture of water and water-soluble film forming polymers can be made up ahead of the processing of the mascara composition. Mix with heating until this aqueous mixture is about 90- 95°C. Q.S. for any water loss from said aqueous mixture.

Slowly combine the two mixtures and mix with a high speed dispersator type mixer. Remove heat source and continue mixing this combined mixture until the temperature of said combined mixture is from about 65°C-70°C. Q.S. said combined mixture for any water loss, add the preservatives and insoluble polymer component and mix until homogeneous. Cool said combined mixture to about 45- 47°C. Add any remaining components. Continue cooling and mixing until said combined mixture is about 27- 30°C. Transfer said combined mixture to suitable storage containers for subsequent filling of retail size packaging.

B. Water-in-Oil Mascara Compositions

Example #1

Ingredient	W/W%
Petroleum Distillate	28.30
Lanolin Acid	4.20
Carnauba Wax	7.00
Candelilla Wax	7.00
Lanolin Alcohols	1.75
White Beeswax	2.50

PEG-5 Soya Sterol	0.50
Propylparaben	0.10
Black Iron Oxide	8.00
Deionized Water	28.75
Methylparaben	0.20
Trisodium EDTA	0.10
Pyrogenic Silica ¹	1.25
Ammonium Hydroxide (28% Aqueous)	0.35
Ammonium Acrylates Copolymer ²	10.00

¹ Aerosil 200 available from Degussa Incorporated

² Syntran 5170 available from Interpolymer Corporation

Example #2

Ingredient	W/W%
Petroleum Distillate	31.15
Isododecane ¹	5.50
Oleic Acid	1.70
Carnauba Wax	5.50
Candelilla Wax	5.50
Soya Sterol	1.75
White Beeswax	3.50
PEG-5 Soya Sterol	2.00
Propylparaben	0.10
C ₁₈ -C ₃₆ Acids	2.50
Zinc Stearate	5.00
Black Iron Oxide	8.00
PVP/Hexadecene Copolymer ²	2.00
Deionized Water	14.10
Methylparaben	0.20
Trisodium EDTA	0.10
Silica ³	0.75
Ammonium Hydroxide (28% Aqueous)	0.35
Ammonium Acrylates Copolymer ⁴	10.00
Quaternium-15	0.30

¹ Permethyl 99A available from Presperse Corporation

² Ganex V216 available from ISP Corporation

³ Aerosil COK 84 available from Degussa Incorporated

4 Syntran 33-1 available from Interpolymer Corporation

Example #3

Ingredient	W/W%
Petroleum Distillate	30.00
Lanolin Acid	4.20
Carnauba Wax	7.00
Candelilla Wax	7.00
Lanolin Alcohols	1.75
White Beeswax	2.50
PEG-5 Soya Sterol	0.50
Propylparaben	0.20
Black Iron Oxide	8.00
Deionized Water	28.75
Methylparaben	0.20
Trisodium EDTA	0.10
Hectorite ¹	2.00
Glycerin	1.50
Xanthan Gum	0.15
Ammonium Hydroxide (28% Aqueous)	0.35
Pentaerythrityl Hydrogenated Rosin	5.00
Phenoxyethanol	0.80

¹ Bentone EW available from Rheox Corp.

Example #4

Ingredient	W/W%
Petroleum Distillate	21.45
Isoparaffin ¹	5.50
Oleic Acid	1.70
Carnauba Wax	5.50
Candelilla Wax	5.50
Soya Sterol	1.75
White Beeswax	3.50
PEG-5 Soya Sterol	2.00
Propylparaben	0.10
C ₁₈ -C ₃₆ Acids	2.50
Zinc Stearate	5.00

Black Iron Oxide	12.00
PVP/Hexadecene Copolymer ²	2.00
Deionized Water	14.10
Methylparaben	0.20
Trisodium EDTA	0.10
Magnesium Aluminum Silicate ³	1.00
Glycerin	1.50
Xanthan Gum	0.15
Ammonium Hydroxide (28% Aqueous)	0.35
Ammonium Acrylates Copolymer ⁴	10.00
Quaternium-15	0.30
Ethyl Alcohol	3.00
Phenoxyethanol	0.80

1 Soltrol 130 available from Phillips Petroleum

2 Ganex V216 available from ISP Corporation

3 Veegum available from R.T. Vanderbilt

4 Syntan 33-1 available from Interpolymer Corporation

PROCESSING DIRECTIONS

Cosmetic emulsions that are water-in-oil preparations can be prepared by blending together the ingredients of the above Examples as follows:

Place the oil-soluble liquids, waxes, and fats into a vessel equipped with heating and mixing. Heat this lipid mixture to about 85°C with low speed mixing until liquefied and homogeneous. With continued mixing add the pigments. Increase the mixing rate to high and mix until the pigments are uniformly dispersed throughout the lipid mixture; about 30-35 minutes. Add emulsifiers to said lipid mixture while continuing to blend.

In a second vessel equipped with mixing and heating, add the water and water-soluble preservatives, mixing with heat until this aqueous mixture is about 65°C. Slowly sprinkle in the inorganic colloidal material and begin higher energy agitation to fully hydrate and activate the colloid particles.

After sufficient deaeration, add the humectant/gum slurry (if present) aqueous/inorganic colloidal phase and continue heating with mild stirring until the temperature reaches 85°C. Q.S. for any water loss from said aqueous mixture and slowly combine it with said lipid mixture.

Add the ammonium hydroxide. Mix without heating this combined mixture until the temperature of said combined mixture is from about 65°C-70°C. Add the Ammonium Acrylates Copolymers. Cool said combined mixture to about 45°C-47°C, wherein any remaining preservatives and optional components are added. Continue cooling and mixing until said combined mixture is

about 27°C-30°C. Transfer said combined mixture to suitable storage containers for subsequent filling in retail size packaging.

What is claimed is:

1. An emulsion-type mascara compositions comprising inorganic colloidal materials wherein said inorganic colloidal materials are in the internal phase of said emulsion and are compatible with said internal phase.
2. The mascara compositions according to claim 1 wherein the inorganic colloidal material is crystalline types of clay selected from the group consisting of three-layer type clays, regular mixed-layer type clays, chain structure type clays and mixtures thereof, preferably expanding lattice clays selected from the group consisting of equi-dimensional smectite clays and elongate smectite clays and mixtures thereof, wherein the equi-dimensional smectite clays are aluminum silicates selected from the group consisting of bentonite, montmorillonite and mixtures thereof and the elongate smectite clays are selected from the group consisting of hectorite, synthetic hectorite, magnesium aluminum silicate and mixtures thereof.
3. An oil-in-water or water-in-oil emulsion mascara composition comprising from 0.05% to 20.0% preferably 1% to 10%, and most preferably from 2% to 5% hydrophobic inorganic colloidal material in the internal phase selected from the group consisting of clays, amorphous silicon dioxide, oxides of aluminum and magnesium, hydroxides of aluminum and magnesium and mixtures thereof, preferably crystalline types of clay selected from the group consisting of three-layer type clays, regular mixed-layer type clays, chain structure type clays and mixtures thereof.
4. The mascara compositions according to claims 1 through 3 wherein the three-layer clay is an expanding lattice clays selected from the group consisting of equi-dimensional smectite clays, elongate smectite clays and mixtures thereof, wherein the equi-dimensional smectite clays are aluminum silicates selected from the group consisting of bentonite, montmorillonite and mixtures thereof and the elongate smectite clays are selected from the group consisting of hectorite, synthetic hectorite, magnesium aluminum silicate and mixtures thereof, preferably hectorite selected from the group consisting of dihydrogenated tallow benzylmonium hectorite, quaternium-18 hectorite, stearylmonium hectorite and mixtures thereof.

5. The mascara compositions according to claims 1 through 4 additionally comprising from 0.05% to 50%, preferably 1.0% to 40% fatty material selected from the group consisting of waxes, fats, fatty acids, fatty alcohols, and mixtures thereof preferably waxes selected from the group consisting of animal waxes, vegetable waxes, mineral waxes, various fractions of natural waxes, synthetic waxes petroleum waxes, ethylenic polymers, hydrocarbon types such as Fischer-Tropsch waxes, silicone waxes, and mixtures thereof wherein the waxes have a melting point between 40°C and 120°C and a needle penetration, as measured according to the American standard ASTM D5, of 3 to 40 at 25°C, most preferably selected from the group consisting of beeswax, lanolin wax, carnauba, candelilla, ozokerite, ceresin, paraffins, microcrystalline waxes, synthetic waxes, polyethylene, C24-45 alkyl methicones and mixtures thereof.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/21890

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K7/032 A61K7/02 A61K7/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 600 445 A (SHISEIDO) 8 June 1994 see claim 1 see page 4, line 33-42 see page 5, line 3-6 see examples 1,2,7 ---	1-5
X	GB 2 027 341 A (REVLON) 20 February 1980 see claims 1-4 see page 1, line 32-50 see examples 3,4,6 ---	1,3,5
X	PATENT ABSTRACTS OF JAPAN vol. 12, no. 421 (C-541) '3268! , 8 November 1988 & JP 63 151351 A (SHISEIDO), 23 June 1988, see abstract --- -/--	1-4

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex.

" Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

Date of the actual completion of the international search

23 April 1998

Date of mailing of the international search report

14/05/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel: (+31-70) 340-2040, Te: 31 551 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Peeters, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/21890

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	DE 19 49 740 A (K.E.REHTIJÄRVI, J.E.VILKKI,) 16 July 1970 see claims 1,7 see page 4, column 2 ---	1-5
X	P.A.CIULLO: "Magnesium Aluminium Silicate In Water-In-Oil Emulsions" DRUG & COSMETIC INDUSTRY, vol. 126, no. 5, 1980, pages 50-153, XP002063212 see page 52 see page 54, column 2 -----	1-5

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 97/21890

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 600445 A	08-06-94	JP 6211629 A	02-08-94
GB 2027341 A	20-02-80	US 4119712 A	10-10-78
		ZA 7804537 A	29-08-79
		AR 215732 A	31-10-79
		AU 522794 B	24-06-82
		AU 3904678 A	21-02-80
		BR 7805554 A	11-03-80
		DE 2836497 A	06-03-80
		FR 2433337 A	14-03-80
DE 1949740 A	16-07-70	FI 44459 B	02-08-71
		AT 294320 A	15-10-71
		CH 550001 A	14-06-74
		DK 125955 B	28-05-73
		GB 1282437 A	19-07-72
		SE 367917 B	17-06-74

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2870/224	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 00/03128	International filing date (day/month/year) 07/02/2000	(Earliest) Priority Date (day/month/year) 09/02/1999
Applicant COLOR ACCESS, INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61K7/021

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 18431 A (PROCTER & GAMBLE) 7 May 1998 (1998-05-07) page 9, line 5 - line 11 page 3, line 28 - line 33 claims 1-10	
A	WO 98 23251 A (PROCTER & GAMBLE) 4 June 1998 (1998-06-04) page 10, paragraph 6 page 8, paragraph 2 claims 1-5	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *Z* document member of the same patent family

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26/04/2000

Name and mailing address of the ISA

 European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Stienon, P

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
W0 9818431 A	07-05-1998	AU 6907698 A	22-05-1998
		CZ 9901508 A	15-09-1999
		EP 0946130 A	06-10-1999
W0 9823251 A	04-06-1998	AU 5366898 A	22-06-1998
		CN 1238676 A	15-12-1999
		CZ 9901838 A	15-09-1999
		EP 0942708 A	22-09-1999